

2.2 Empirical research activities (ERAs)

2.2.1 Recall vs recognition – An assessment of the relative sensitivity of different measures of retention

Introduction

Most people would consider the central component of memory as an active information-processing system to be the storage of information, especially within the long-term memory. To assess whether material has been successfully processed into our memory, we can employ different methods to measure how much information has been retained.

The most commonly used approaches to gauge levels of retention would be recall and recognition. Within the recall method, subjects have to remember information with few (if any) cues or hints to aid retrieval. The process of recognition, however, allows subjects to identify the information within a set of alternatives comprising the correct choice(s) and incorrect distracters. Recognition, therefore, provides more cues to aid the individual in recollection of data, while recall requires him or her to generate the material solely from memory.

Tests used to evaluate academic performance employ these two methods. Most questions – short-answer or essay – use the recall approach, as it determines learning and understanding by asking students to reproduce knowledge without having any of the material before them (such as Section B in the Unit 3 Psychology examination). Other questions use the recognition method by instructing students to match items from lists or asking them to choose the correct answer from a set of alternatives, as is the case in the multiple-choice section of the Psychology examination.

Studies suggest that recall is harder for subjects than recognition, and because individuals cannot always easily remember information without some cue to help them, recall is considered a less sensitive measure of retention than recognition.

Aim

The aim of this experiment is to measure the relative sensitivity of recall and recognition as measures of how much information has been retained in memory.

The desired response is for the participant to correctly remember as many of the memorised nonsense syllables as possible.

- 1 Formulate an operational hypothesis based on the information in the introduction and the aim.

- 2 What is the IV?

- 3 What is the DV?

Method

Materials

- The list of 15 nonsense syllables (List A)
- A stopwatch or timer
- A pen
- Either a blank sheet of paper or a copy of the list of 45 nonsense syllables (List B)

Procedure

Step 1: Participants from your Psychology class are to be randomly divided into two groups. Both groups are to be given four minutes to memorise the list of 15 nonsense syllables (List A).

List A		
Roh	Sah	Nem
Huv	Pel	Gox
Mab	Toj	Lug
Ker	Cuy	Xib
Diw	Yic	Qaj

List B		
Toj	Zan	Rek
Lug	Mih	Diw
Cis	Roh	Xam
Hes	Wud	Sog
Vak	Mep	Cuy
Hif	Taf	Xib
Fut	Pec	Der
Jux	Sah	Nid
Huv	Pel	Liy
Qaj	Jow	Mab
Fov	Zom	Yug
Qof	Koz	Huv
Jat	Big	Wuk
Nem		

Step 2: After four minutes, the participants are told to stop and cover List A.

Step 3: Group 1 is given a blank sheet of paper and instructed to write down as many of the nonsense syllables as they can recall in any order. Group 2 is given a copy of List B (a list of 45 nonsense syllables containing the items from List A among 30 distracter syllables), and instructed to circle the syllables they recognise from the original list.

Step 4: Participants are given as much time as they need, and are to signal that they are finished by putting their pens down.

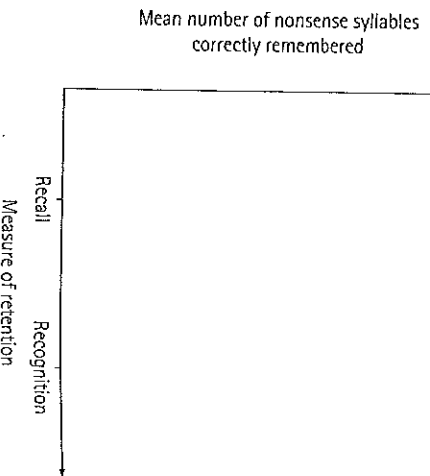
Step 5: Score the lists individually, and then collate the numbers of syllables correctly recalled by individuals in each group. Calculate the mean scores for each group and record these in the table provided. If the means are similar, then a measure of variability should also be used.

Results

1 Complete the following table.

Measure of retention	Recall (Group 1)	Recognition (Group 2)
Mean number of nonsense syllables correctly remembered		
Maximum score		
Minimum score		
Range of the scores		

2 Graph your data.



Discussion

Answer the following questions, which may then form part of your discussion.

1 What did the results show? Did your data support your hypothesis?

2 Why are nonsense syllables often used in memory research rather than actual words?

3 Clarify whether the recognition method would always be the best way to assess the retention of information in memory.

4 If we cannot remember something, does this mean that it is no longer in our memory?

5 Outline some examples of how recall and recognition are evident in real life. Which method would you consider to be more valid and/or trustworthy in these situations? Explain.

6 Do you vary how you prepare for tests requiring recall as opposed to those involving recognition? If so, how?

Note: A blank ERA Laboratory Recording Sheet is provided on pages 266–275. Photocopy and use this blank sheet for each ERA. Completing this sheet will help you with structuring your laboratory report. (Your final report should be between 750 and 1000 words.)

2.2.2 Do mnemonics improve the encoding and retrieval of information from memory?

Introduction

In order for information to proceed into our long-term memory, it must be successfully encoded into a form that will facilitate its storage and later retrieval. This process can occur on different levels, from shallow processing of structural characteristics, to processing what it sounds like, to the deeper semantic levels involving meaningful organisation and association. Our ability to retrieve material depends on how well we encoded the information in the first place, and retrieval cues often match the manner in which we have encoded the data.

These processes can be enhanced using strategies called mnemonics. Such techniques generally work on the principle of adding information to the items to be remembered to make them more meaningful. This may involve forming associations between the new material and existing knowledge. An example of this approach would be the use of acronyms, where the first letters of the concepts to be remembered form pronounceable words that act as retrieval cues for the series of items. Other mnemonic procedures employ imagery to try to link the concepts together within an overall mental representation. Narrative chaining is one such link method, where unrelated items are incorporated into a sentence or story. By remembering the plot line of the story, we in turn recall the relevant items within it.

Mnemonic techniques typically involve elaborate processes, where the new information is connected with existing knowledge stored in our memory. As such, studies have shown that mnemonics are more effective for memorising material than repetition, which relies heavily on maintenance rehearsal. The better and deeper the encoding, the easier it is to retain and recall information.

Aim

The aim of this experiment is to measure the relative effectiveness of different methods of encoding and retrieving information from memory.

The desired response is for the participant to correctly remember as many of the words from the list as possible.

- 1 Formulate an operational hypothesis based on the information in the introduction and the aim.

- 2 What is the IV?

- 3 What is the DV?

Method

Materials

- The list of 15 words to be memorised
- A stopwatch or timer
- A pen
- A blank sheet of paper
- Copies of the instructions for each group

List of 15 words to memorise

Electric	Nanny
House	Action
Nut	Car
Ink	Nine
Grass	Monkey
Education	Magazine
Open	Rent
Yacht	

Procedure

Step 1: Read the following introduction to your participants:

'My name is and I'm a Year 12 Psychology student at We are researching processes involved in memory as part of our work requirements, and I was wondering if you would mind spending a few minutes performing a simple task, namely memorising a list of words to see how many you can remember. Your identity will remain anonymous.'

Step 2: Once selected, the participants are randomly allocated into one of the following groups and the additional instructions are given:

- Group 1: Study the list of words you have been given. Note that the first letter from each word combines to spell "enhancing memory". You will now be given 30 seconds to memorise the words on the list.
- Group 2: Try to remember the words on the list by making up a story that links all of the words. You will now be given 30 seconds to memorise the words on the list.

- Group 3: Very carefully, study the list of words you have been given. Try to remember as many words as you can. You will now be given 30 seconds to memorise the words on the list.'

Make sure that you separate each group to ensure that participants do not read any of the other groups' instructions.

Step 3: The participants are then presented with the list of words and are given 30 seconds to memorise them.

Step 4: After 30 seconds, the participants are told to stop and cover the list. On a blank sheet of paper, ask them to reproduce as many of the words as they can remember. They are given as much time as they need, and are to signal that they are finished by putting their pen down.

When the participants have finished, say 'Thank you for your participation, it is most appreciated.'

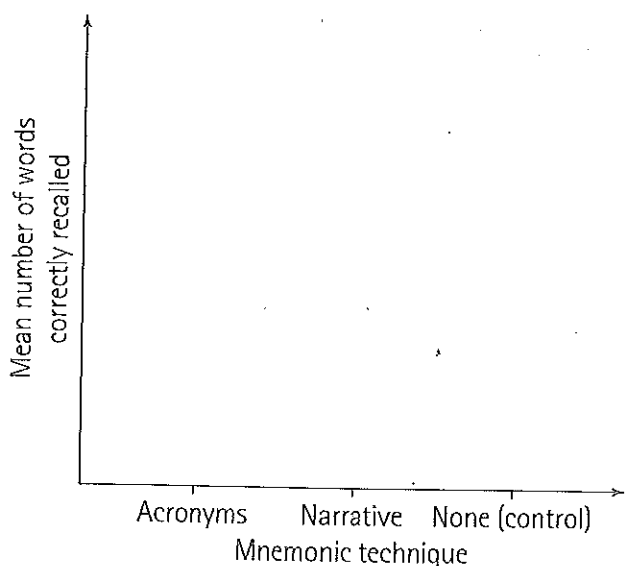
Step 5: The responses are corrected, and the scores are then collated for each group. The mean scores for each condition are calculated, and recorded in the table provided. If the means are similar, then a measure of variability should also be used.

Results

- 1 Complete the following table.

	Acronym (Group 1)	Narrative (Group 2)	Control (Group 3)
Mean score (number of words recalled)			
Maximum score			
Minimum score			
Range of the scores			

2 Graph your data.



Discussion

Answer the following questions, which may then form part of your discussion.

1 What can you conclude from the results? Did your data support your hypothesis?

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2 Why was a control group included in this experiment?

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3 Discuss the relative effectiveness of the techniques and level of processing (shallow or deep) used by each group. Which was better and why?

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4 What implications do these findings have concerning how we should process things into our memory?

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5 What does this experiment indicate regarding the usefulness of 'rote' learning as opposed to other methods of study and preparation for examinations?

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6 Identify any possible confounding variables and describe how they may have influenced the results.

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